

***Myrsidea* Waterston (Phthiraptera: Menoponidae) from the Emberizidae (Passeriformes), with descriptions of 13 new species**

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Abstract

The three currently recognized species of *Myrsidea* from passerine emberizid hosts are discussed. Thirteen new species are described and illustrated. They and their type hosts are *Myrsidea campestris* ex *Euneornis campestris* (L.), *M. citriniae* ex *Sicalis citrina* Pelzeln, *M. zonotrichiae* ex *Zonotrichia capensis* (Statius Müller), *M. iliaca* ex *Passerella iliaca* (Merrem), *M. coronatae* ex *Paroaria coronata* (J. F. Miller), *M. sinaloae* ex *Melozone kieneri* (Bonaparte), *M. taciturni* ex *Arremon taciturnus* (Hermann), *M. aurantiirostris* ex *Arremon aurantiirostris* Lafresnaye, *M. brunneinuchi* ex *Buarremon brunneinuchus* (Lafresnaye), *M. gularis* ex *Paroaria gularis* (L.), *M. conirostris* ex *Arremonops conirostris* (Bonaparte), *M. marini* ex *Pezopetes capitalis* Cabanis, and *M. anoxanthi* ex *Loxipasser anoxanthus* (Gosse). *Myrsidea melanorum* (Kellogg) is regarded as a *species sedis incertae*. Keys are provided for the identification of females and males of these species.

Key words: Phthiraptera, Emberizidae, *Myrsidea*

Introduction

Price and Johnson (2006a) reported 260 previously recognized species of *Myrsidea* Waterston from the Passeriformes in addition to nine from the Piciformes: Ramphastidae and three from the Apodiformes: Trochilidae. The new species described by Price and Johnson (2006a and 2006b) bring the total species of *Myrsidea* on passersines to 265. There are three *Myrsidea* species recognized from hosts in the passerine family Emberizidae as delimited by Dickinson (2003). It should be noted that Price *et al.* (2003), in the checklist of chewing lice, followed the avian classification scheme of Howard and Moore (1991). By doing so, they also included four species of *Myrsidea* on Emberizidae that Dickinson now considers as members of the Thraupidae (Price and Dalgleish 2006). We have examined a number of lice from emberizids, including hosts of the three previously described species and of 13 new species. Herein we describe, illustrate, and provide keys for these species.

In the following descriptions, all measurements are in millimeters. Abbreviations are TW, temple width; HL, head length at midline; PW, prothorax width; MW, metathorax width; AWIV, abdomen width at segment IV; GL, male genitalia length; ANW, female anus width; TL, total length. Classification of hosts below order follows Dickinson (2003). The number in parentheses following each female and male heading is for the number of quantified specimens.

Holotypes for nine of the new species, as indicated by "(USNM)", are in the collection of the National Museum of Natural History, Smithsonian Institution, Washington, D.C.; those of the other four new species, as indicated by "(OSU)", are in the K.C. Emerson Museum, Oklahoma State University, Stillwater; paratypes are also deposited in these two collections. The etymology of new species, unless otherwise presented, is derived from either the generic or specific name of the type host.

Genus *Myrsidea* Waterston

Myrsidea Waterston 1915: 12. Type species: *Myrsidea victrix* Waterston by original designation.

A thorough characterization of this genus may be found in Clay (1966). We provide here only the characters pertinent to the delineation of the species known from the emberizids.

Head (Fig. 1) evenly rounded anteriorly; lacking lateral slit or notch; with long inner and minute outer occipital seta on each side; each temple margin with 4 very long setae; without ventral sclerotized processes; posterior gula seta heavier and longer than those anterior to it.

Thorax (Fig. 1) with pronotum lacking central setae; with 3 short setae at each lateral angle and 6 longer posterior marginal setae. Mesonotum well defined, with 2 minute medioanterior setae adjacent to postnotum and 2 minute setae at posterior margin. Metanotum without central setae, but with 6 short anterior setae around periphery and with very long seta at lateroposterior corner in addition to other marginal setae. Prosternal plate well developed, elongate, with 2 short anterior setae; mesothorax with notum, pleura, and sternum fused to form strongly sclerotized ring; metasternal plate prominent, diamond-shaped; venter of femur III with setal brush.

Abdomen (Figs. 1, 6) having undivided tergites; without anterior setae except for very small seta near lateroanterior corner on each side of tergite I (not included in setal count); sternite I small, without setae; sternite II often enlarged, with aster of 3–5 heavy setae at each lateroposterior corner. Postspiracular setae very long on I (0.17–0.32; N=45; Mean=0.247), extremely long on II, IV, and VIII (>0.34; N=135; Mean=0.406), shorter on III (0.12–0.25; N=47; Mean=0.175). Pleurites without anterior setae. Female anus oval, with each dorsal and ventral fringe of 27–43 setae, and without inner setae. Female subgenital plate of fused sternites VII–IX, with serrated posterior margin; setae given for VII represent those anteriorly located on region of segment VII, and those for VIII–IX are the remainder of the plate setae. Male subgenital plate of fused sternites VIII–IX; setae given for VIII represent those anteriorly located on region of segment VIII; the remainder of the plate setae are not quantified but their state may be seen on the various figures; genitalia of characteristic shape (Fig. 5), with spinous sac having distinctively shaped associated sclerite, except for those of the *serini* group.

Sexual dimorphism is limited to males having smaller dimensions, often sparser abdominal chaetotaxy, and differences associated with the posterior abdomen. Many females have some degree of enlargement of anterior abdominal tergites. Male tergites are unmodified, with pattern of postspiracular setal lengths usually similar to that of the female. Characters listed above for the genus or for the group characters below will not be repeated in the species descriptions.

campestris species group

The six species of this group are characterized as having both sexes with strongly developed hypopharyngeal sclerites (Fig. 4) and sternite II well developed (much as in Fig. 2), the females with lightly spiculate posterior margin of subgenital plate (Fig. 6), and the male genital sac sclerite tapered posteriorly, with dark medioposterior line (Figs. 3, 11, 14, or 17).

Myrsidea campestris Price and Dalgleish, new species

(Figs. 1–6)

Type host. *Euneornis campestris* (L.), Orangequit.

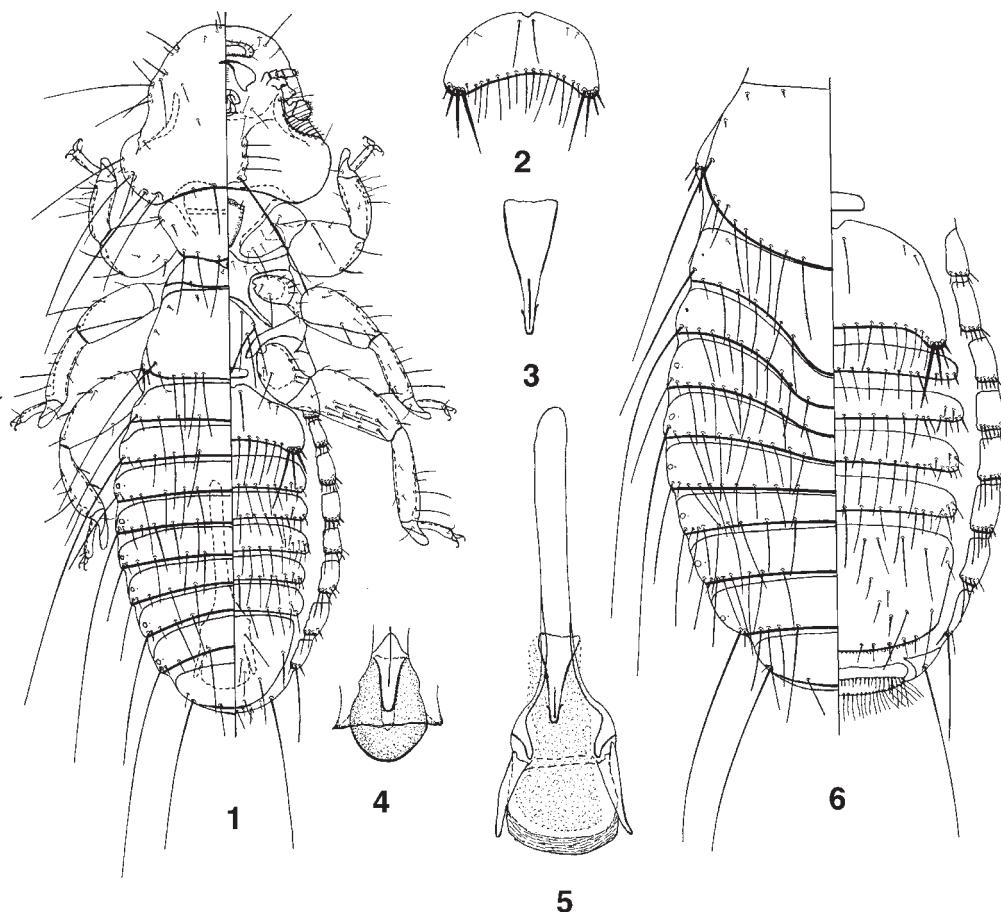
Female (10). Gula with 4 setae on each side, rarely one side with 5. Metanotum and dorsoventral abdomen as in Fig. 6. Metanotum much enlarged, posterior margin evenly rounded, with 18–22 setae; metasternal plate with 6–7 setae. Anterior abdominal tergites II–V medially compressed by enlarged metanotum and tergite I. Tergal setae, with median gap in each row: I, 11–15; II, 18–21; III–IV, 20–24; V, 16–21; VI, 15–18; VII,

12–15; VIII, 11–13. Postspiracular setae subequally long on V–VI (0.12–0.18), and much shorter on VII (0.06–0.09). Sternal setae: II, 4 in each aster, 15–18 marginal between asters, 5–6 anterior; III, 18–21; IV–V, 26–37; VI, 23–30; VII, 12–15; VIII–IX, 17–23. Dimensions: TW, 0.40–0.43; HL, 0.29–0.31; PW, 0.26–0.28; MW, 0.41–0.45; AWIV, 0.51–0.59; ANW, 0.19–0.20; TL, 1.31–1.45.

Male (9). As in Fig. 1. Gula with 4 setae on each side. Metanotum with 11–14 marginal setae; metasternal plate with 5–6 setae. Tergal setae, with median gap in each row: I, 8–11; II–IV, 12–17; V, 11–14; VI, 10–12; VII, 8–10; VIII, 8–9. Postspiracular setae long on V–VI (0.10–0.12), longer on VII (0.15–0.22). Sternal setae: II, 4 in each aster, 12–17 marginal between asters, 5–7 anterior (Fig. 2); III, 13–19; IV, 20–25; V, 24–29; VI, 21–26; VII, 10–14; VIII, 4–6. Genital sac sclerite as in Fig. 3, with very small subapical projection on each side. Dimensions: TW, 0.37–0.38; HL, 0.27–0.28; PW, 0.23–0.24; MW, 0.32–0.35; AWIV, 0.40–0.43; GL, 0.37–0.39; TL, 1.11–1.20.

Type material. Holotype female (USNM), ex *E. campestris*, **JAMAICA:** Marshall's Pen, Mandeville, Feb 1982, R.C. Dalgleish. Paratypes (USNM): 9 females, 9 males, same data as holotype.

Remarks. This species is easily distinguished from others of the group by the female with the large posteriorly rounded metanotum bearing at least 18 marginal setae and the unusually short postspiracular setae on tergite VII. Both sexes have only five to seven anterior setae on sternite II, including one to three longer medioanterior setae. The male is further recognized by the numbers of abdominal tergal and sternal setae and its small dimensions.



FIGURES 1–6. *Myrsidea campestris*. 1. Entire dorsoventral male. 2. Male sternite II. 3. Male genital sac sclerite. 4. Female hypopharyngeal sclerites. 5. Male genitalia. 6. Female metanotum and dorsoventral abdomen.

***Myrsidea citrinae* Price and Dalgleish, new species**
(Figs. 7–9)

Type host. *Sicalis citrina* Pelzeln, Stripe-tailed Yellow Finch.

Female (6). Gula usually with 4, less often 3, setae on each side. Metanotum and dorsal abdomen as in Fig. 7. Metanotum not enlarged, with 6 marginal setae; metasternal plate with 5–6 setae. Abdominal tergites of similar size, with only slight medioposterior convexity on II–IV or II–V. Tergal setae, with median gap in each row: I, 8–12; II–V, 10–14; VI–VII, 9–11; VIII, 8. Postspiracular setae very long on V–VI (0.14–0.23), extremely long on VII (>0.34). Sternal setae: II, 3–4 in each aster, 11–13 marginal between asters, 8–9 anterior; III, 20–22; IV–V, 26–31; VI, 24–27; VII, 9–14; VIII–IX, 19–23. Dimensions: TW, 0.42–0.44; HL, 0.29–0.32; PW, 0.26–0.29; MW, 0.40–0.42; AWIV, 0.53–0.58; ANW, 0.18–0.20; TL, 1.36–1.49.

Male (7). Gula with 4, much less often 3, setae on each side. Metanotum and dorsal abdomen as in Fig. 8. Metanotum with 6 marginal setae; metasternal plate with 5–6 setae. Tergal setae, with median gap in each row: I, 6–8; II, 8–12; III–V, 10–12; VI–VII, 8–11; VIII, 8–9. Sternal setae: II, 3–4 in each aster, 9–12 marginal between asters, 8–10 anterior (Fig. 9); III, 14–19; IV, 21–25; V, 23–28; VI, 21–25; VII, 10–13; VIII, 4. Genital sac sclerite as for *M. campestris*. Dimensions: TW, 0.39–0.40; HL, 0.27–0.30; PW, 0.23–0.25; MW, 0.33–0.35; AWIV, 0.42–0.45; GL, 0.38–0.40; TL, 1.12–1.20.

Type material. Holotype female (USNM), ex *S. citrina*, **VENEZUELA:** Edo. Bolivar, 60 km E Sta. Elena, Jan 1987, R.C. Dalgleish. Paratypes (USNM): 5 females, 9 males, same data as holotype.

Remarks. The female of *M. citrinae* is differentiated from others of the group by having only six marginal metanotal setae, a definite median gap in the tergal rows, extremely long postspiracular setae on tergite VII, and an unmodified tergite I. The male is separated by the small number of setae on the metanotal margin and on tergites VII–VIII and sternites VII–VIII. Additionally, both sexes have at least four longer medioanterior setae on sternite II.

***Myrsidea zonotrichiae* Price and Dalgleish, new species**
(Fig. 10)

Type host. *Zonotrichia capensis* (Statius Müller), Rufous-collared Sparrow.

Female (5). Gula with 4–5 setae on each side. Metanotum and dorsal abdomen as in Fig. 10. Metanotum not enlarged, with 8–10 marginal setae; metasternal plate with 6–8 setae. Abdomen with tergites of similar size, tergites III–V with very slight medioposterior convexity. Tergal setae, with median gap in each row: I, 8–12; II–III, 12–16; IV–VII, 14–19; VIII, 10–12. Postspiracular setae long on V–VI (0.16–0.17), extremely long on VII (>0.36) and similar to those on VIII. Sternal setae: II, 3–4 in each aster, 13–15 marginal between asters, 8–11 anterior; III, 21–23; IV, 24–32; V, 30–35; VI, 26–30; VII, 13–17; VIII–IX, 16–22. Dimensions: TW, 0.42–0.43; HL, 0.31–0.32; PW, 0.28–0.30; MW, 0.41–0.43; AWIV, 0.53–0.55; ANW, 0.19–0.21; TL, 1.36–1.45.

Male (3). Gula with 5 setae on each side. Metanotum with 10 marginal setae; metasternal plate with 6 setae. Tergal setae, with median gap in each row: I, 10; II, 12–14; III–VI, 16–18; VII, 14–16; VIII, 11–12. Sternal setae: II, as for female; III, 20–21; IV–V, 26–31; VI, 20–26; VII, 11–14; VIII, 6–7. Genital sac sclerite much as in Fig. 11. Dimensions: TW, 0.41–0.44; HL, 0.30; PW, 0.25–0.29; MW, 0.37–0.39; AWIV, 0.42–0.46; GL, 0.41–0.44; TL, 1.25–1.29.

Type material. Holotype female (USNM), ex *Z. capensis*, **VENEZUELA:** Edo. Bolivar, 60 km E Sta. Elena, Jan 1987, R.C. Dalgleish. Paratypes (USNM): 4 females, 3 males, same data as holotype.

Remarks. The females of this species and *M. citrinae* are the only two species of the group without any markedly modified abdominal tergites. However, *M. zonotrichiae* is recognized by having at least eight marginal metanotal setae, five gular setae on one or both sides, and 10 or more setae on tergite VIII. The number of setae on abdominal segments VII–VIII will separate males of *M. zonotrichiae* from others of the group.

***Myrsidea iliaca* Price and Dalgleish, new species**
(Figs. 11–12)

Type host. *Passerella iliaca* (Merrem), Fox Sparrow.

Female (9). Gula with 4–5 setae on each side. Metanotum and dorsal abdomen as in Fig. 12. Metanotum not enlarged, with 10–12 marginal setae; metasternal plate with 6–8 setae. Abdominal tergites I–II enlarged, with I largest, having pronounced medioposterior convexity, III–V smaller and medially compressed. Tergal setae, with median gap in each row: I, 8–10; II–III, 8–12; IV–VI, 9–16; VII, 8–11; VIII, 8. Postspiracular setae long on V–VI (0.13–0.14), very long on VII (0.26–0.28). Sternal setae: II, 3–4 in each aster, 9–13 marginal between asters, 8–11 anterior; III, 18–25; IV, 26–29; V, 27–33; VI, 24–29; VII, 12–16; VIII–IX, 20–24. Dimensions: TW, 0.45–0.48; HL, 0.31–0.34; PW, 0.27–0.30; MW, 0.42–0.47; AWIV, 0.54–0.64; ANW, 0.20–0.23; TL, 1.42–1.59.

Male (11). Gula with 4–5 setae on each side. Metanotum with 7–9 marginal setae; metasternal plate with 6 setae. Tergal setae, with median gap in each row: I, 6–8; II, 8–10; III–IV, 10–13; V–VI, 8–12; VII, 8–10; VIII, 6–8. Sternal setae: II, as for female; III, 14–19; IV, 23–26; V, 24–29; VI, 20–27; VII, 12–17; VIII, 6–8. Genital sac sclerite as in Fig. 11, with slight apical indentation and distinct subapical lateral projections. Dimensions: TW, 0.40–0.44; HL, 0.29–0.32; PW, 0.24–0.28; MW, 0.34–0.38; AWIV, 0.45–0.49; GL, 0.37–0.44; TL, 1.14–1.35.

Type material. Holotype female (OSU), ex *P. iliaca*, USA: New Jersey, Princeton, 28 Nov 1939. Paratypes (OSU), all from type host: 1 female, 1 male, same data as holotype; 1 male, same except 24 Nov 1939, C.B. Worth; 1 female, New Jersey, 24 Sept 1940, C.B. Worth; 1 male, New Jersey, 10 Sept 1938; 3 males, New York, 1940; 1 female, New York, Long Island, 1939, M. Beals.

Other material. 8 females, 6 males, ex *Pipilo erythrophthalmus* (L.), Eastern Towhee, USA: Colorado, Illinois, Mississippi, New Jersey, New York, North Carolina (1 collection each).

Remarks. The female of *M. iliacea*, with a normal metanotum having at least 10 marginal setae, the enlarged tergites I–II, a distinct median gap in the abdominal tergal rows, and fewer setae on tergites VII–VIII, is separable from others of this group. The male is recognized by the number of setae on the metanotal margin and on tergites and sternites VII–VIII.

We initially had believed our material from *Pipilo erythrophthalmus* was *M. melanorum*. However, our lice are distinctly different from that described by Kellogg (1896) and are inseparable from the *Myrsidea* collected from the Fox Sparrow.

***Myrsidea coronatae* Price and Dalgleish, new species**
(Figs. 13–15)

Type host. *Paroaria coronata* (J.F. Miller), Red-crested Cardinal.

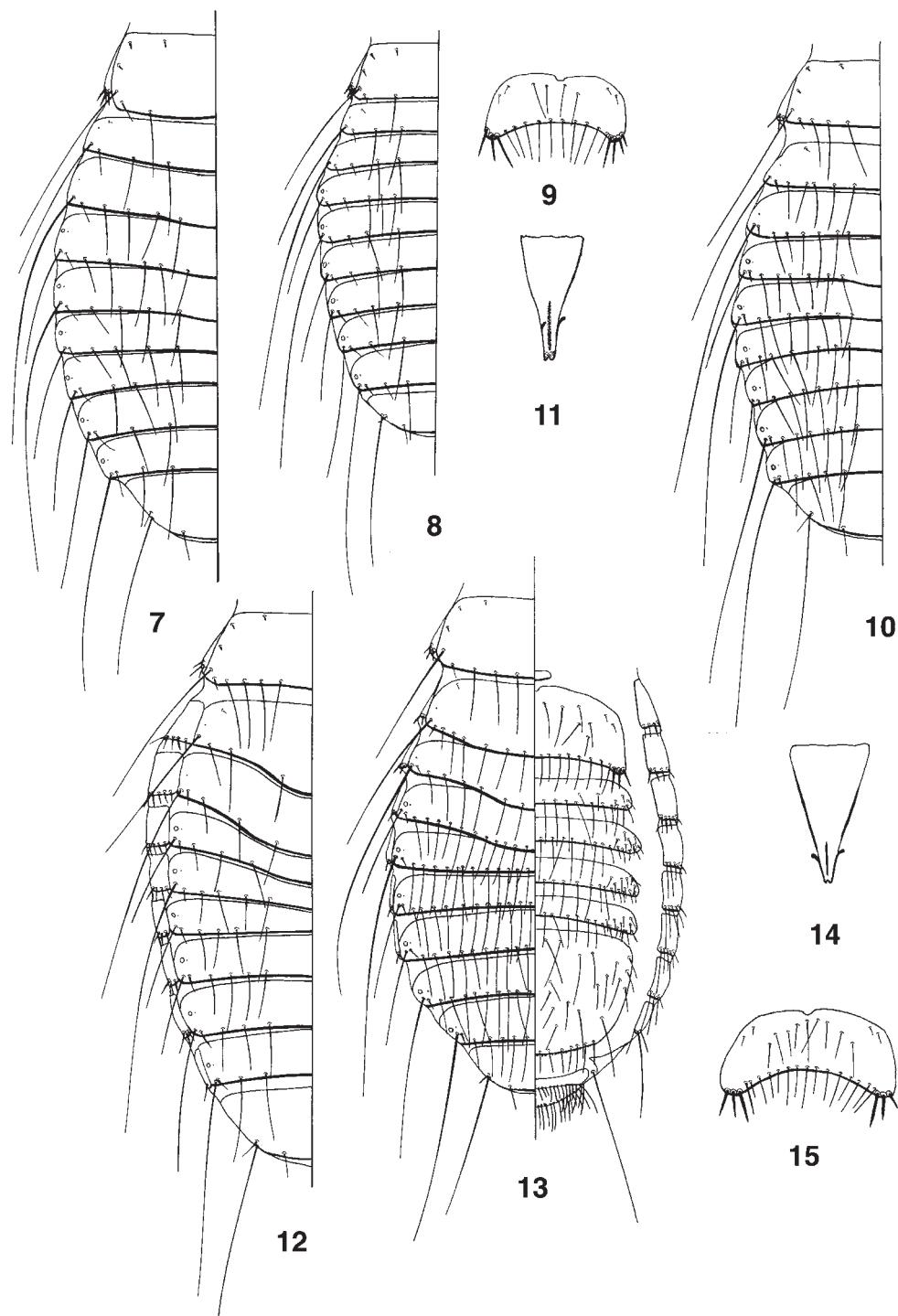
Female (3). Gula with 5–6 setae on each side. Metanotum and dorsoventral abdomen as in Fig. 13. Metanotum not enlarged, with 9–10 marginal setae; metasternal plate with 6 setae. Abdominal tergites I–III largest at midline, each with modest medioposterior convexity. Tergal setae, without median gap in row: I, 13–15; II, 15–17; III, 22–28; IV–V, 26–28; VI, 25–26; VII, 21–24; VIII, 14. Postspiracular setae long on V–VI (0.17–0.18), very long on VII (0.35). Sternal setae: II, 3–4 in each aster, 15–18 marginal between asters, 14–15 anterior; III, 29–34; IV–V, 36–44; VI, 30–41; VII, 16–18; VIII–IX, 22–28. Dimensions: TW, 0.47–0.49; HL and PW, 0.32–0.33; MW, 0.49–0.51; AWIV, 0.66–0.70; ANW, 0.21–0.23; TL, 1.61–1.66.

Male (5). Gula with 4–5 setae on each side. Metanotum with 9–10 marginal setae; metasternal plate with 6 setae. Tergal setae, without median gap in row: I, 16–18; II, 19–22; III–VI, 22–28; VII, 20–26; VIII, 15–17. Sternal setae: II, 3–4 in each aster, 13–16 marginal between asters, 9–15 anterior (Fig. 15); III, 29–36; IV–VI, 33–39; VII, 22–23; VIII, 6–9. Genital sac sclerite (Fig. 14) with small subapical projection on each side.

Dimensions: TW, 0.43–0.44; HL, 0.28–0.31; PW, 0.29–0.30; MW, 0.38–0.41; AWIV, 0.48–0.52; GL, 0.39–0.43; TL, 1.29–1.35.

Type material. Holotype female (USNM), ex *P. coronata*, USA: Hawaii, Kaena Point, Oahu, 16 Feb 1963, R.C. Dalgleish 866. Paratypes (USNM): 2 females, 5 males, same data as holotype.

Remarks. This species is distinctive by both sexes without a median gap in the tergal rows. Additionally, the female has at least 25 setae on each of tergites IV–VI and the male has at least 23 setae on these segments.



FIGURES 7–15. 7–9. *Myrsidea citrinae*. 7. Female metanotum and dorsal abdomen. 8. Male metanotum and dorsal abdomen. 9. Male sternite II. 10. *M. zonotrichiae* female metanotum and dorsal abdomen. 11–12. *M. iliaceae*. 11. Male genital sac sclerite. 12. Female metanotum and dorsal abdomen. 13–15. *M. coronatae*. 13. Female metanotum and dors-oventral abdomen. 14. Male genital sac sclerite. 15. Male sternite II.

***Myrsidea sinaloae* Price and Dagleish, new species**

(Figs. 16–17)

Type host. *Melozone kieneri* (Bonaparte), Rusty-crowned Ground Sparrow.

Female (1). Gula with 5 setae on each side. Metanotum and dorsal abdomen as in Fig. 16. Metanotum not enlarged, with 14 marginal setae; metasternal plate with 6 setae. Abdomen with tergite II medially enlarged and compressing III–IV. Tergal setae, with median gap in rows: I, 17; II–III, 13–14; IV–VI, 17; VII, 11; VIII, 8. Postspiracular setae long on V–VI (0.11–0.17), very long on VII (0.30). Sternal setae: II, 3–4 in each aster, 16 marginal between asters, 14 anterior; III, 25; IV–V, 33–34; VI, 27; VII, 16; VIII–IX, 22. Dimensions: TW, 0.46; HL, 0.32; PW, 0.30; MW, 0.47; AWIV, 0.67; ANW, 0.23; TL, 1.51.

Male (1). Gula with 5 setae on each side. Metanotum with 10 marginal setae; metasternal plate with 6 setae. Tergal setae, with median gap in rows: I–VI, 14–16; VII, 10; VIII, 8. Sternal setae: II, 4 in each aster, 11 marginal between asters, 10 anterior; III, 23; IV–V, 27–29; VI, 23; VII, 12; VIII, 5. Genital sac sclerite as in Fig. 17, slightly distorted, but with prominent subapical projection on each side. Dimensions: TW, 0.42; HL and PW, 0.29; MW, 0.40; AWIV, 0.50; GL, 0.43; TL, 1.28.

Type material. Holotype female (OSU), ex *M. kieneri*, **MEXICO:** Sinaloa, Santa Lucia, 30 July 1963, CLW-47. Paratype (OSU): 1 male, same data as holotype.

Remarks. The female of *M. sinaloae* is unique in having the metanotum and tergite I normal and tergite II with a pronounced medioposterior convexity (Fig. 16). The male is recognized by having 10 marginal metanotal setae in conjunction with the number of setae on tergites I and VII–VIII and sternites III and VII. Although described from only a female/male pair, the female tergal development clearly defines the species. The male is tenuously separated on the basis of quantitative abdominal chaetotaxy.

Etymology. This species is named for the Mexican state in which the type host was collected.

***taciturni* species group**

The six species of this group are characterized as having both sexes with strongly developed hypopharyngeal sclerites, the females with lightly spiculate posterior margin of subgenital plate, and the males with a slender strongly arched sternite II (Figs. 19, 25, 27, 32, 38) and genital sac sclerite tapered posteriorly, with dark medioposterior line (Figs. 21, 24, 29, 33, 35).

***Myrsidea taciturni* Price and Dagleish, new species**

(Figs. 18–22)

Type host. *Arremon taciturnus* (Hermann), Pectoral Sparrow.

Female (7). Gula with 3–5 setae on each side. Metanotum and dorsoventral abdomen as in Fig. 22. Metanotum not enlarged, with 12–15 marginal setae; posteriormost pair of peripheral anterior setae distinctly longer than anterior setae; metasternal plate with 6–8 setae. Abdomen with tergite I largest, with tapered convex posterior margin resulting in median compression of tergites II–VI. Tergal setae, with distinct median gap in rows: I, 12–16; II, 18–22; III–IV, 21–23; V–VI, 18–22; VII, 17–21; VIII, 15–19. Postspiracular setae long on V–VI (0.16–0.23), somewhat longer on VII (0.23–0.29). Sternal setae: II, 3–4 in each aster, 19–21 marginal between asters, 11–13 anterior (Fig. 20); III, 26–31; IV, 34–40; V, 40–47; VI, 33–43; VII, 21–25; VIII–IX, 25–32. Dimensions: TW, 0.48–0.50; HL and PW, 0.31–0.33; MW, 0.46–0.49; AWIV, 0.65–0.68; ANW, 0.21–0.23; TL, 1.59–1.67.

Male (7). Gula with 4–5 setae on each side. Metanotum and dorsoventral abdomen as in Fig. 18. Metanotum with 12–15 marginal setae; metasternal plate with 6–8 setae. Tergal setae, without median gap in rows: I,

15–18; II–V, 23–28; VI, 24–26; VII, 22–23; VIII, 17–21. Sternal setae: II, 3–4 in each aster, 17–20 marginal between asters, 12–13 anterior (Fig. 19); III, 25–29; IV, 33–37; V, 37–43; VI, 35–39; VII, 25–29; VIII, 12–19. Genital sac sclerite as in Fig. 21, with slight apical indentation and very small subapical projection on each side. Dimensions: TW, 0.43–0.45; HL and PW, 0.28–0.31; MW, 0.39–0.40; AWIV, 0.48–0.51; GL, 0.42–0.47; TL, 1.28–1.33.

Material. Holotype female (USNM), ex *A. taciturnus*, **VENEZUELA:** Edo. Bolivar, 60 km E Sta. Elena, Jan 1987, R.C. Dalgleish. Paratypes (USNM): 7 females, 7 males, same data as holotype.

Remarks. The large number of marginal metanotal setae and setae on tergites VII–VIII, coupled with the enlargement and shape of tergite I, facilitate easy separation of females of *M. taciturni* from others of the group. The male is identified by its number of metanotal and abdominal setae.

***Myrsidea aurantiirostris* Price and Dalgleish, new species** (Figs. 23–25)

Type host. *Arremon aurantiirostris* Lafresnaye, Orange-billed Sparrow.

Female (5). Gula with 4–6 setae on each side. Metanotum and dorsal abdomen as in Fig. 23. Metanotum somewhat enlarged with curved posterior margin bearing 12–16 setae; metasternal plate with 8–11 setae. Abdominal tergites I–II enlarged, remainder subequally small. Tergal setae, without median gap in rows: I, 24–32; II, 26–36; III–VI, 32–42; VII, 26–34; VIII, 15–19. Postspiracular setae subequally long on V–VII (0.12–0.18). Sternal setae: II, 4 in each aster, 20–24 marginal between asters, 13–17 anterior; III, 29–35; IV–VI, 37–50; VII, 25–31; VIII–IX, 23–27. Dimensions: TW, 0.47–0.49; HL and PW, 0.30–0.32; MW, 0.48–0.51; AWIV, 0.64–0.66; ANW, 0.22–0.24; TL, 1.48–1.55.

Male (6). Gula with 4–6 setae on each side. Metanotum with 10–13 marginal setae; metasternal plate with 7–10 setae. Tergal setae, without median gap in rows: I, 20–25; II, 25–32; III, 29–34; IV, 26–35; V, 31–38; VI, 27–33; VII, 24–28; VIII, 17–21. Sternal setae: II, 4 in each aster, 16–22 marginal between asters, 16–19 anterior (Fig. 25); III, 23–29; IV, 26–37; V–VI, 32–41; VII, 26–32; VIII, 9–18. Genital sac sclerite as in Fig. 24, rounded apically without subapical projections. Dimensions: TW, 0.43; HL, 0.28–0.30; PW, 0.27–0.29; MW, 0.36–0.39; AWIV, 0.48–0.51; GL, 0.40–0.43; TL, 1.22–1.26.

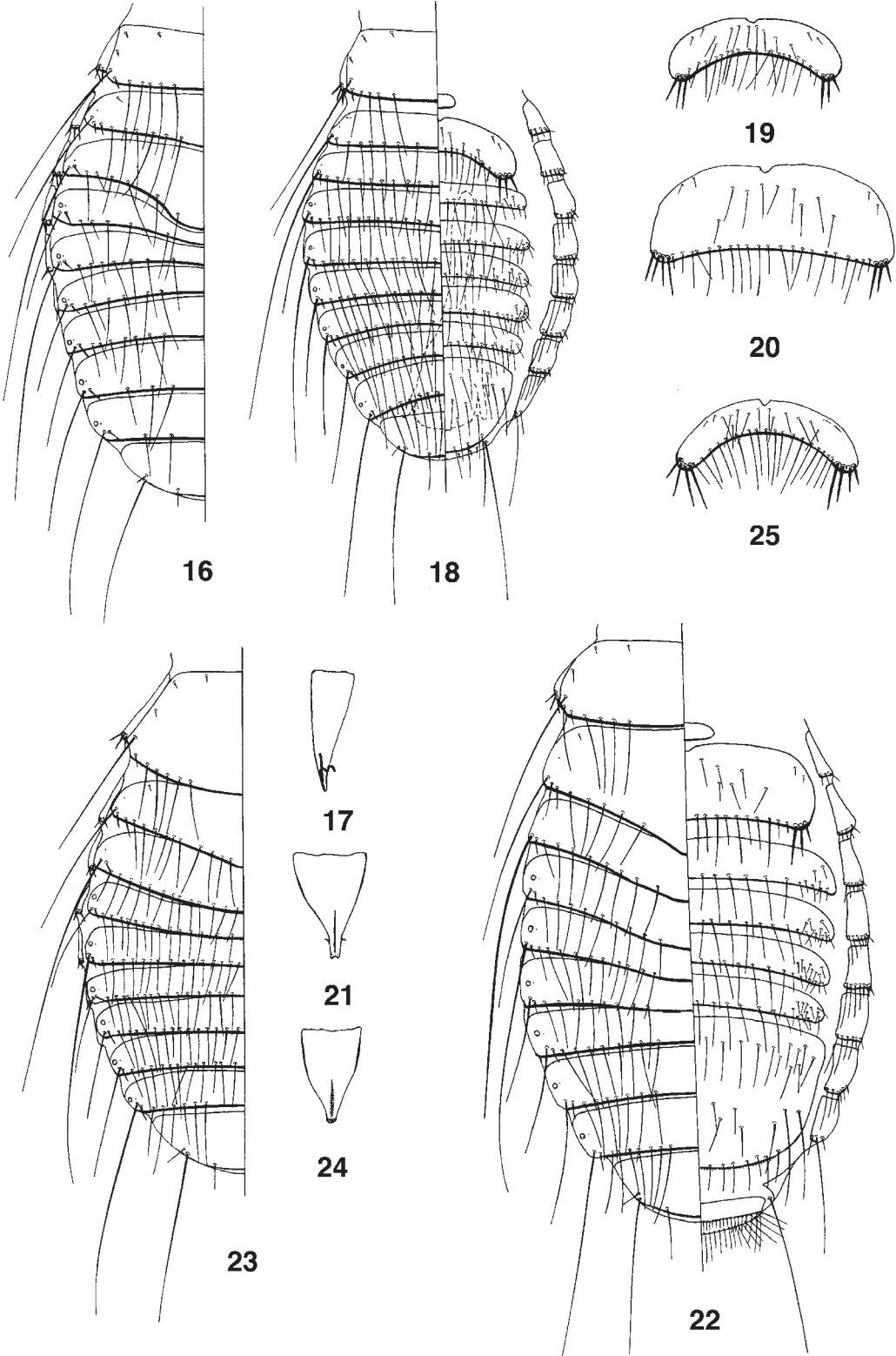
Type material. Holotype female (USNM), ex *A. aurantiirostris*, **COSTA RICA:** Puntarenas, Monte Anivo Lodge, 13 km N Portero Grande, 20 Mar 1995, Fisher #2122. Paratypes, all ex type host: 4 females, 5 males (USNM), same data as holotype; 1 female, 1 male (OSU), Limon Prov., Pandora, 28 Apr 1964, O-2639.

Remarks. The uninterrupted rows of tergal setae along with the number of setae on the metanotum, the metasternal plate, and tergites I and VII–VIII will differentiate females of *M. aurantiirostris* from others of the group. Males are recognized by their number of setae on the abdominal tergites and sternites.

***Myrsidea brunneinuchi* Price and Dalgleish, new species** (Figs. 26–30)

Type host. *Buarremon brunneinuchus* (Lafresnaye), Chestnut-capped Brush Finch.

Female (4). Gula with 5–6 setae on each side. Metanotum and dorsal abdomen as in Fig. 30. Metanotum not enlarged, with 14–16 marginal setae; metasternal plate with 11–13 setae. Abdominal tergites I–II enlarged, remainder smaller. Tergal setae, without median gap in rows: I, 16–19; II, 17–20; III, 24–29; IV, 29–33; V, 34–40; VI, 33–36; VII, 35–39; VIII, 25–27. Postspiracular setae long on V–VI (0.12–0.22), very long on VII (0.27–0.28). Sternal setae: II, 4–5 in each aster, 19–22 marginal between asters, 27–31 anterior (Fig. 28); III–IV, 31–38; V, 37–43; VI, 35–48; VII, 32–38; VIII–IX, 36–48. Dimensions: TW, 0.47–0.49; HL, 0.29–0.33; PW, 0.30–0.31; MW, 0.46–0.49; AWIV, 0.61–0.63; ANW, 0.22–0.24; TL, 1.48–1.53.



FIGURES 16–25. 16–17. *Myrsidea sinaloae*. 16. Female metanotum and dorsal abdomen. 17. Male genital sac sclerite. 18–22. *M. taciturni*. 18. Male metanotum and dorsoventral abdomen. 19. Male sternite II. 20. Female sternite II. 21. Male genital sac sclerite. 22. Female metanotum and dorsoventral abdomen. 23–25. *M. aurantiirostris*. 23. Female metanotum and dorsal abdomen. 24. Male genital sac sclerite. 25. Male sternite II.

Male (5). Gula with 5–6 setae on each side. Metanotum with 15–20 marginal setae; metasternal plate with 10–12 setae (Fig. 27). Tergal setae, without median gap in rows: I, 22–25; II, 26–27; III–VII, 28–34; VIII, 19–24. Sternal setae: II, 4–5 in each aster, 18–21 marginal between asters, 24–30 anterior (Fig. 27); III, 37–47; IV, 42–53; V, 44–59; VI, 49–51; VII, 42–46; VIII, 29–35 (Fig. 26). Genital sac sclerite as in Fig. 29, with slight apical indentation and no evident lateral subapical projections. Dimensions: TW, 0.44–0.45; HL, 0.29–0.32; PW, 0.27–0.29; MW, 0.37–0.39; AWIV, 0.46–0.51; GL, 0.41–0.42; TL, 1.28–1.34.

Type material. Holotype female (USNM), ex *B. brunneinuchus*, **COSTA RICA:** San José Prov., Los Chiquites, Tres Ríos Reservoir, 3 May 1995, Fisher & J.S. #2151. Paratypes (USNM), all from type host: 1 male, same data as holotype; 3 females, same except 17 May 1995, Fisher & J.S. #2205; 5 males, **VENEZUELA:** Trujillo, Bocono, 1 Mar 1986, R.C. Dalgleish.

Remarks. Both sexes of *M. brunneinuchi* have no median gap in the tergal setal rows and are separated from others of the group by a much more abundant abdominal chaetotaxy. This is best shown by such a large number of setae on female tergites VII–VIII and male sternites II–III and VIII.

Myrsidea gularis Price and Dalgleish, new species

(Figs. 31–33)

Type host. *Paroaria gularis* (L.), Red-capped Cardinal.

Female. Unknown.

Male (2). Gula with 5 setae on each side. Metanotum with 8–9 marginal setae; metasternal plate with 6–7 setae. Tergal setae, without median gap in rows (Fig. 31): I, 14–16; II, 19–22; III–VI, 20–25; VII, 17–22; VIII, 13. Postspiracular setae long on V–VI (0.13–0.14), very long on VII (0.28–0.35). Sternal setae: II, 4 in each aster, 20–25 marginal between asters, 14 anterior (Fig. 32); III, 30–31; IV, 41–47; V, 39–52; VI, 37–45; VII, 29–32; VIII, 21. Genital sac sclerite as in Fig. 33, with very broad dark line, slightly indented apex, and no evidence of lateral subapical projections. Dimensions: TW, 0.42; HL and PW, 0.29–0.30; MW, 0.39; AWIV, 0.47–0.49; GL, 0.41; TL, 1.26–1.29.

Type material. Holotype male (USNM), ex *P. gularis*, **VENEZUELA:** Est. Guarico, 40 km S Calaboso, Feb 1985, R.C. Dalgleish. Paratype (USNM): 1 male, same data as holotype.

Remarks. Even with the absence of females, the males of *M. gularis* are separable from others of the group by the numbers of setae on abdominal tergites and sternites, especially tergites I and VII–VIII and sternites II–IV and VIII.

Myrsidea conirostris Price and Dalgleish, new species

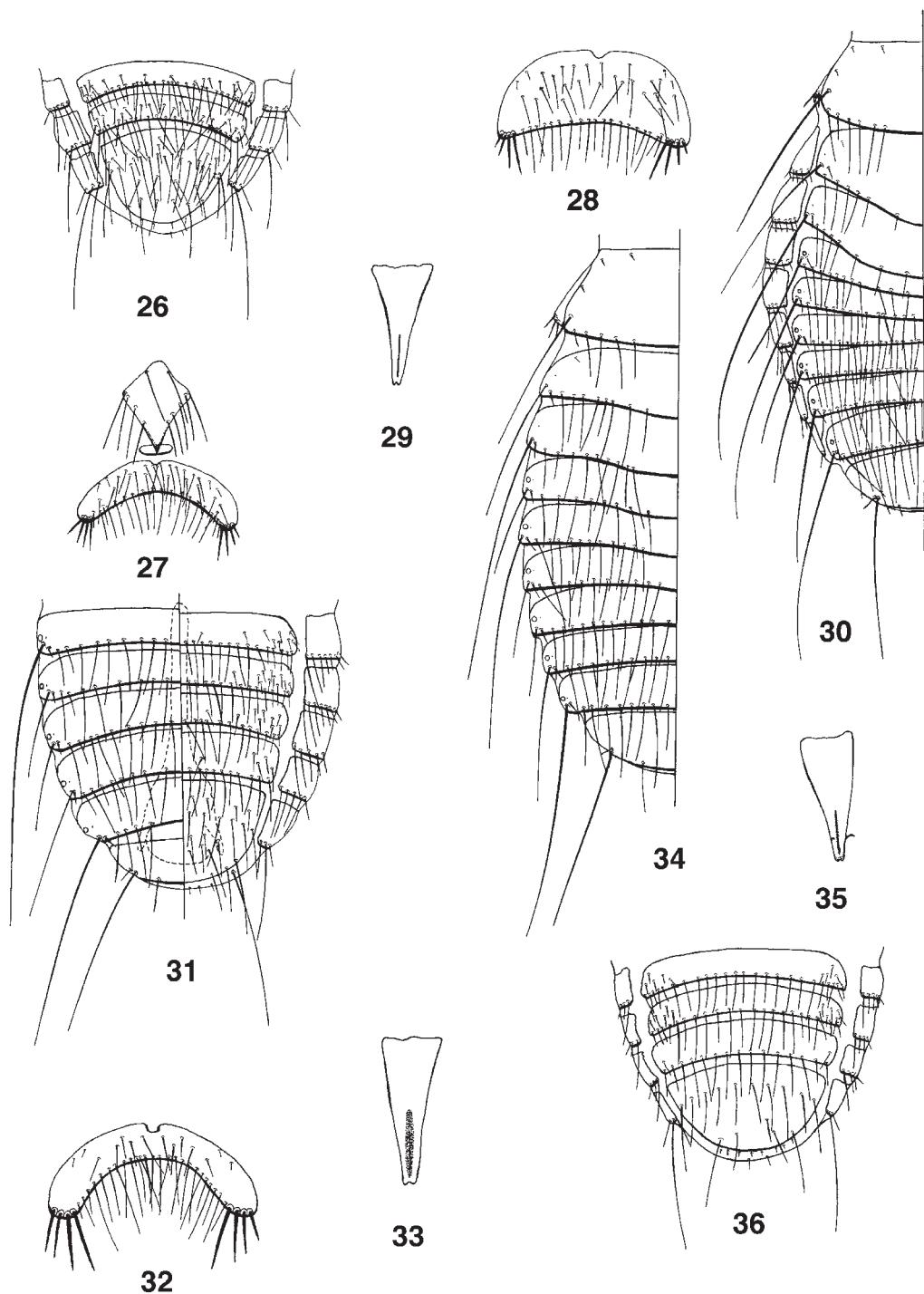
(Figs. 34–36)

Type host. *Arremonops conirostris* (Bonaparte), Black-striped Sparrow.

Female (2). Gula with 4–6 setae on each side. Metanotum and dorsal abdomen as in Fig. 34. Metanotum not enlarged, with 12 marginal setae; metasternal plate with 6 setae. Abdominal tergites I–II largest, with I–IV or I–V having slight medioposterior convexity. Tergal setae, with median gap at least in rows on I–V: I, 16–20; II, 19–22; III, 16–20; IV, 18–25; V–VI, 18–27; VII, 19–23; VIII, 14–19. Postspiracular setae long on V–VI (0.13–0.15), very long on VII (0.22–0.23). Sternal setae: II, 4 in each aster, 20–24 marginal between asters, 13 anterior; III, 27–36; IV, 33–42; V, 37–50; VI, 32–39; VII, 13–17; VIII–IX, 21–32. Dimensions: TW, 0.48–0.52; HL, 0.33–0.35; PW, 0.32–0.34; MW, 0.48–0.52; AWIV, 0.68; ANW, 0.23–0.26; TL, 1.66–1.68.

Male (2). Gula with 4–5 setae on each side. Metanotum with 8–10 marginal setae; metasternal plate with 6 setae. Tergal setae, with small median gap on I–III to I–VII: I, 15; II, 16–17; III–V, 18–22; VI, 19–25; VII, 18–22; VIII, 16–17. Postspiracular setae on VI very long (0.18–0.25), much longer than on V and near length

of setae on VII. Sternal setae: II, 3–4 in each aster, 18–20 marginal between asters, 11–13 anterior; III, 23–25; IV, 29–31; V–VI, 30–34; VII, 17–22; VIII, 10 (Fig. 36). Genital sac sclerite as in Fig. 35, with slight indentation at apex and with small lateral subapical projection on each side. Dimensions: TW, 0.42–0.43; HL, 0.30–0.31; PW, 0.28–0.30; MW, 0.38; AWIV, 0.48–0.50; GL, 0.43; TL, 1.28–1.29.



FIGURES 26–36. 26–30. *Myrsidea brunneinuchi*. 26. Male ventral terminalia. 27. Male metasternum and sternites I–II. 28. Female sternite II. 29. Male genital sac sclerite. 30. Female metanotum and dorsal abdomen. 31–33. *M. gularis*. 31. Male dorsoventral terminalia. 32. Male sternite II. 33. Male genital sac sclerite. 34–36. *M. conirostris*. 34. Female metanotum and dorsal abdomen. 35. Male genital sac sclerite. 36. Male ventral terminalia.

Type material. Holotype female (OSU), ex *A. conirostris*, **PANAMA:** Panama Prov., Pacora, 5 June 1966, G.M. Lab. Paratypes, all from type host: 1 male (OSU), same data as holotype; 1 female, 1 male (USNM), **COSTA RICA:** Hacienda Baru, Dominical Puntarenus, 1 July 1993, Fisher & J.S. #735.

Remarks. The female of *M. conirostris*, with tergites I–II similar in size and shape, resembles *M. zonotrichiae*, a member of the *campestris* species group. The number of setae on tergites I–II clearly separates these. The male of *M. conirostris* is unusual in having longer postspiracular setae on tergite VI, much longer than on V and nearly as long as on VII. This separation is further supported by the numbers of tergal and sternal setae.

***Myrsidea marini* Price and Dalgleish, new species**
(Figs. 37–38)

Type host. *Pezopetes capitalis* Cabanis, Large-footed Finch.

Female (1). Gula with 5 setae on each side. Metanotum and dorsoventral abdomen as in Fig. 37. Metanotum enlarged, with circular posterior margin bearing 6 laterally-positioned setae; metasternal plate with 9 setae. Abdominal tergite I with pronounced medioposterior convexity and other tergites as shown. Tergal setae, with median gap in each row: I–II, 27; III–V, 24–25; VI, 22; VII–VIII, 19–20. Postspiracular setae long on V–VI (0.12–0.14), very long on VII (0.30). Sternal setae: II, 4 in each aster, 20 marginal between asters, 10 anterior; III, 28; IV–VI, 33–35; VII, 22; VIII–IX, 31. Dimensions: TW, 0.45; HL, 0.29; PW, 0.31; MW, 0.49; AWIV, 0.60; ANW, 0.21; TL, 1.56.

Male (1). Gula with 5 setae on each side. Metanotum with 10 marginal setae; metasternal plate with 10 setae. Tergal setae, without median gap in rows: I, 23; II, 25; III–VI, 22–24; VII, 25; VIII, 22. Sternal setae: II, 3 in each aster, 16 marginal between asters, 17 anterior (Fig. 38); III, 31; IV–VI, 36–39; VII, 34; VIII, 25. Genital sac sclerite distorted, but appearing similar to Fig. 29. Dimensions: TW, 0.42; HL and PW, 0.28; MW, 0.39; AWIV, 0.49; GL, 0.46; TL, 1.39.

Type material. Holotype female (OSU), ex *P. capitalis*, **COSTA RICA:** San Jose, Empalme, Madre Selva, 9 Aug 1985, M.A. Marin. Paratype (OSU): 1 male, same data as holotype.

Remarks. The broadly rounded metanotum and tergite I with a conspicuous medioposterior convexity set the female of *M. marini* apart from others of this group. The small number of marginal metanotal setae and the large number of setae on tergite I further support this separation. The very long postspiracular setae on tergite VII and the number of abdominal tergal and sternal setae will identify the male of *M. marini*.

Etymology. This species is named for M. A. Marin, Western Foundation of Vertebrate Zoology, Los Angeles, California, the collector of the bird yielding the lice described here.

***serini* species group**

The three species of this group are characterized as having both sexes with weakly developed hypopharyngeal sclerites (Fig. 40), the females with a strongly spiculate posterior margin of the subgenital plate (Fig. 39), and the males with a well-developed sternite II (Fig. 43) and unusual genital sac sclerites (Fig. 44).

***Myrsidea serini* (Séguy)**
(Fig. 39)

Menopon serini Séguy 1944: 80. Type host: "Serinus canaria serinus (L.)" = *Serinus serinus* (L.), European Serin (Fringillidae).

Female (3). Gula with 4–5 setae on each side. Metanotum, dorsal abdomen, and ventral terminalia as in Fig. 39. Metanotum not enlarged, with 12–15 marginal setae; metasternal plate with 4–6 setae. Abdominal tergites

unmodified, with slight medioposterior curvature associated with III–IV. Tergal setae, with median gap on III–VIII: I, 14–16; II, 17–18; III–V, 14–17; VI, 12–14; VII, 9–11; VIII, 8. Postspiracular setae long on V–VI (0.16–0.21), extremely long on VII (0.34–0.40). Sternal setae: II, 3–4 in each aster, 11–13 marginal between asters, 6–9 anterior; III, 21–24; IV–V, 30–38; VI, 19–26; VII, 12–14; VIII–IX, 16–19. Dimensions: TW, 0.40–0.42; HL, 0.27–0.30; PW, 0.27–0.28; MW, 0.41–0.46; AWIV, 0.61–0.65; ANW, 0.19–0.24; TL, 1.45–1.56.

Male (3). Gula with 4–5 setae on each side. Metanotum and dorsal abdomen much as in Fig. 42. Metanotum with 11–12 marginal setae; metasternal plate with 5 setae. Tergal setae, with median gap on posterior segments: I, 15–16; II, 21–22; III, 19–20; IV, 18–19; V–VII, 16–18; VIII, 12–14. Sternal setae: II, 3–4 in each aster, 10–12 marginal between asters, 8–10 anterior; III, 19–24; IV–V, 35–38; VI, 24–29; VII, 14–16; VIII, 4–5. Dimensions: TW, 0.37–0.39; HL, 0.27–0.28; PW, 0.24–0.26; MW, 0.35–0.39; AWIV, 0.49–0.52; GL, 0.39–0.43; TL, 1.20–1.35.

Material examined. 3 females, 3 males, ex *Emberiza citrinella calliginosa* Clancey, NEW ZEALAND (3 collections).

Remarks. This is an atypical species of *Myrsidea* in that it is the only one reported from this genus by Price *et al.* (2003) to occur on hosts in two different passerine families -- the Fringillidae and the Emberizidae. Klockenhoff (1984) redescribed this species and recorded it from one species of *Serinus* each from Morocco and New Zealand, one of *Carduelis* each from Spain and New Zealand, and one of *Emberiza* from New Zealand. The detailed description is excellent and is accompanied by fine illustrations. Our descriptive details for *M. serini* are based only on the material we have studied from *E. citrinella*. Since the other specimens included in this louse taxon by Klockenhoff (1984) are in the Fringillidae and beyond the scope of this paper, we tentatively accept these also as *M. serini*.

Myrsidea anoxanthi Price and Dalgleish, new species (Figs. 40–44)

Type host. *Loxipasser anoxanthus* (Gosse), Yellow-shouldered Grassquit.

Female (7). Gula with 4–5 setae on each side. Close to *M. serini* (Fig. 39). Metanotum not enlarged, with 8–11 marginal setae; metasternal plate with 5–6 setae (Fig. 41). Abdomen with tergites essentially unmodified. Tergal setae, with median gap only on posterior segments: I, 10–12; II, 14–16; III, 11–15; IV, 13–14; V, 11–13; VI, 11–12; VII, 8–10; VIII, 8–9. Postspiracular setae long on V–VI (0.12–0.17), extremely long on VII (0.30–0.37). Sternal setae: II, 3–4 in each aster, 11–13 marginal between asters, 8–12 anterior (Fig. 41); III, 18–22; IV–V, 27–37; VI, 20–31; VII, 16–18; VIII–IX, 14–17. Dimensions: TW, 0.34–0.37; HL, 0.25–0.27; PW, 0.23–0.26; MW, 0.36–0.41; AWIV, 0.51–0.54; ANW, 0.17–0.19; TL, 1.26–1.34.

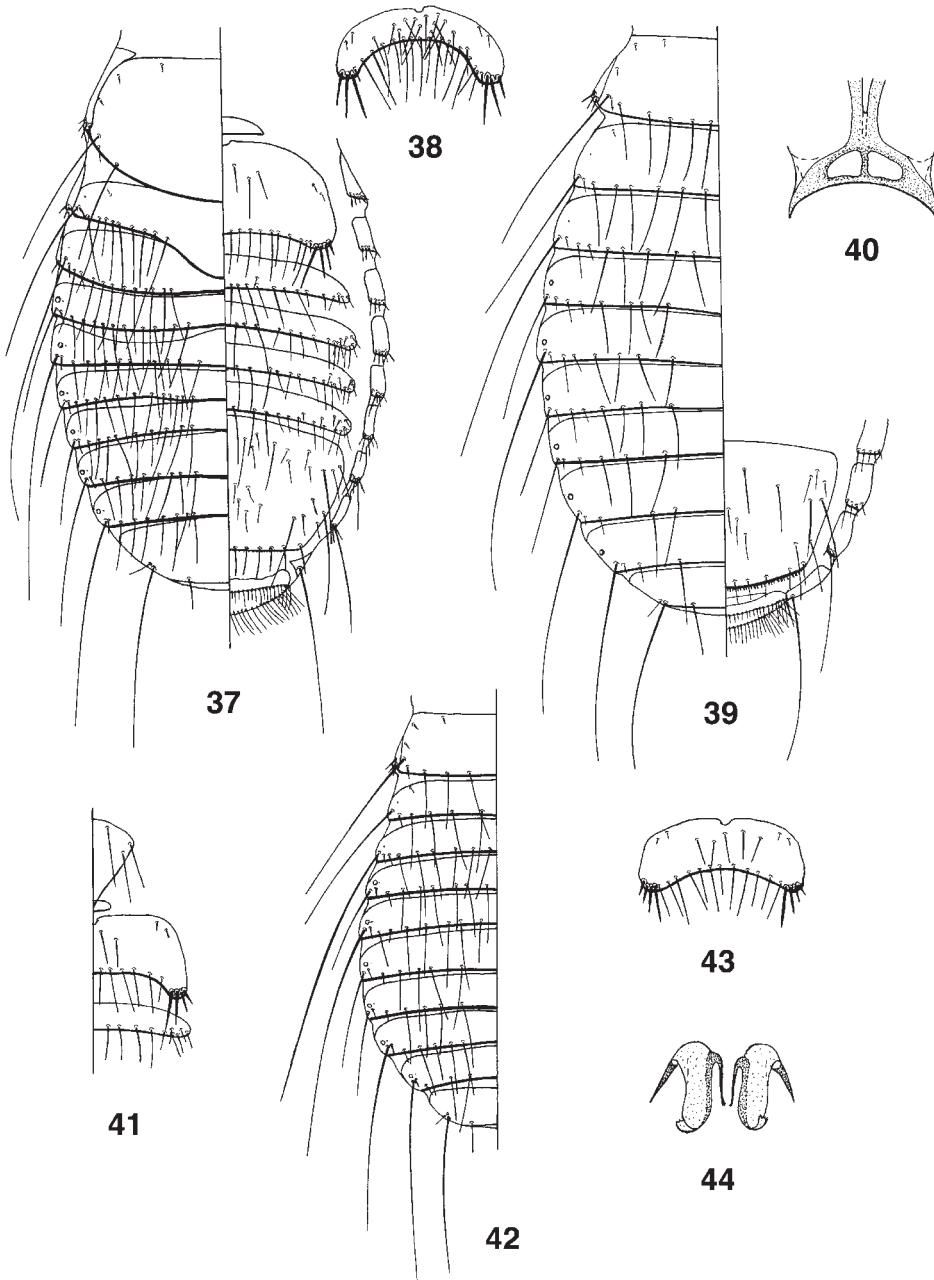
Male (4). Gula with 4–5 sete on each side. Metanotum and dorsal abdomen as in Fig. 42. Metanotum with 10 marginal setae; metasternal plate with 5–6 setae. Tergal setae, with median gap only on posterior segments: I, 11–13; II, 15–17; III–V, 14–18; VI, 12–14; VII, 12–13, VIII, 9–11. Sternal setae: II, 3–4 in each aster, 11–13 marginal between asters, 9–10 anterior (Fig. 43); III, 19–22; IV–V, 24–31; VI, 22–26; VII, 17–18; VIII, 6–9. Dimensions: TW, 0.33–0.34; HL, 0.23–0.25; PW, 0.22–0.23; MW, 0.31–0.33; AWIV, 0.39–0.43; GL, 0.35–0.37; TL, 1.05–1.10.

Type material. Holotype female (USNM), ex *L. anoxanthus*, JAMAICA: Marshall's Pen, Mandeville, Feb 1982, R.C. Dalgleish. Paratypes (USNM): 2 females, 3 males, same data as holotype.

Other material. 4 females, 1 male, ex *Sporophila minuta* (L.), Ruddy-breasted Seedeater, VENEZUELA (1 collection).

Remarks. Both sexes of *M. anoxanthi* are consistently smaller than those of *M. serini*, generally being at or below the lowest values of the ranges given by Klockenhoff (1984). Also, the females of this new species tend to have fewer abdominal setae, especially on the anterior tergites and sternites. Males are not as clearly separated by these quantitative data, but the metanotal margin of *M. anoxanthi* has only 10 setae versus 11–15

for *M. serini*. These two species are clearly closely related, but the new species quantitatively is sufficiently distinct to justify its recognition.



FIGURES 37–44. 37–38. *Myrsidea marini*. 37. Female metanotum and dorsoventral abdomen. 38. Male sternite II. 39. *M. serini* female metanotum, dorsal abdomen, and ventral terminalia. 40–44. *M. anoxanthi*. 40. Female hypopharyngeal sclerites. 41. Female metasternum and sternites I–III. 42. Male metanotum and dorsal abdomen. 43. Male sternite II. 44. Male genital sac sclerites.

Myrsidea major (Piaget)

Menopon quadrifasc iatum var. *major* Piaget 1880: 441. Type host: "Fringilla (Emberiza) nivalis" = *Plectrophenax nivalis* (L.), Snow Bunting.

Female (6). Gula with 5, less often 4, setae on each side. Close to *M. serini* (Fig. 39). Metanotum not enlarged, with 11–12 marginal setae; metasternal plate with 6 setae. Abdomen with tergites essentially

unmodified. Tergal setae, with at most only weak median gap: I, 13–14; II, 14–17; III, 14–18; IV–V, 12–15; VI, 10–13; VII, 8–10; VIII, 8. Postspiracular setae long to very long on V–VI (0.18–0.33), extremely long on VII (0.38–0.45). Sternal setae: II, 4–5 in each aster, 12–14 marginal between asters, 9–10 anterior; III, 20–24; IV–V, 30–35; VI, 25–27; VII, 11–15; VIII–IX, 16–21. Dimensions: TW, 0.42–0.43; HL, 0.28–0.31; PW, 0.28–0.30; MW, 0.42–0.44; AWIV, 0.58–0.64; ANW, 0.21–0.23; TL, 1.60–1.66.

Male. Unknown.

Material examined. 6 females, ex *P. nivalis*, (no location data) representing lectotype and paratypes, the entire type series of this species, bearing slide numbers 842 and 841 respectively.

Remarks. Although the material for *M. major* is limited to the females of the type series, this species is clearly a member of the *serini* species group. They are morphologically closest to *M. serini*, differing principally in having longer postspiracular setae on tergites V–VII, somewhat greater total length, and fewer setae on tergite VII. While these differences are not profound, we have opted to continue to recognize this as a valid species pending additional collections from the type host and the study of male specimens.

Species sedis incertae

Myrsidea melanorum (Kellogg)

Menopon melanorum Kellogg 1896: 532. Type host: *Pipilo erythrophthalmus* (L.), most likely an erroneous host.

Remarks. This species was described by Kellogg (1896) based on one female supposedly from the type host collected at Lawrence, Kansas. Although we have been unable to locate this type specimen, the full dorsal female illustration, the principal feature of value in this description, clearly shows the abdominal tergal development without any unusual modification, quite different from that shown by the female lice we have available from *P. erythrophthalmus*. While these tergal shapes of *M. melanorum* are reminiscent of some of the other species we are describing (e.g., Figs. 7, 10), it is impossible to associate this specimen with any of our series. The only conclusion we can reach is that this species be regarded as a *species sedis incertae* until the time at which additional material, including associated males, may become available. With the propensity of Kellogg to have incorrect host associations of some of his new species, we suspect that this is yet another example of this and that its true identity likely will never be known.

Discussion

As a consequence of the large number of undetermined *Myrsidea* available to us, and the many described species from a variety of avian hosts, we found it necessary to partition our efforts by dealing with specimens from selected host families. We are mindful that this process could initially lead one to conclude that there are discrete assemblages of *Myrsidea* associated with host families, when this might not prove to be the case. The Buntings, American Sparrows, and allies, more formally known as emberizids, were considered by Sibley and Ahlquist (1990), based on DNA hybridization evidence, to be a tribe within the subfamily Emberizinae of the family Fringillidae. Dickinson (2003), whom we follow, elevated the tribes and subfamilies of Sibley and Ahlquist's Fringillidae to family status, though in general recognizes the close association of these taxa within Sibley and Ahlquist's Fringillidae.

The results of our study reported here are consistent with our earlier studies on passerine *Myrsidea* of various host families in that these lice show an unusually high degree of host/louse specificity. The study of the emberizid *Myrsidea* has revealed a close anatomical relationship with those from the Thraupidae, Timaliidae, Tyrannidae, and Pipridae, yet the separation of the louse species remains clear cut. This relationship is especially evident in the structure of the male genital sac sclerite, with the typical pattern being for an elongate triangular shape with a dark median apical line and varying degrees of development of lateral subapical

projections. In spite of these similarities, the unique chaetotaxy of both sexes and female tergal development continue to offer excellent features for species recognition.

Keys to the species of *Myrsidea* from the Emberizidae

Females (except for *M. gularis*)

- 1 Hypopharyngeal sclerites weak (Fig. 40) 2
Hypopharyngeal sclerites strong (Fig. 4) 4
- 2 Temple width <0.38; total length <1.36; tergite I with <13 setae *anoxanthi* n. sp.
Temple width >0.39; total length >1.40; tergite I with >12 setae 3
- 3 Tergite VII with 9–11 setae; total length <1.59; temple width 0.40–0.42; postspiracular setae on V 0.16–0.18 long *serini* (Séguy)
Tergite VII usually with 8 setae; total length >1.59; temple width 0.42–0.43; postspiracular setae on V 0.19–0.28 long *major* (Piaget)
- 4 Postspiracular seta on tergite VII short; metanotum large, rounded, fringed with >16 setae (Fig. 6) *campestris* n. sp.
Postspiracular seta on tergite VII longer; metanotum usually otherwise 5
- 5 All tergites II–VII with uninterrupted row of setae 6
Tergites II–VII with definite median gap in several to all rows 8
- 6 Tergite VIII with >23 setae; tergite VII with >34 (Fig. 30) *brunneinuchi* n. sp.
Tergite VIII with <20 setae; tergite VII with <35 7
- 7 Metanotum with >11 marginal setae; metasternal plate with >7 setae; tergite I with >21 (Fig. 23) *aurantiirostris* n. sp.
Metanotum with <11 marginal setae; metasternal plate with <7 setae; tergite I with <19 (Fig. 13) *coronatae* n. sp.
- 8 Metanotum with only 6 marginal setae 9
Metanotum with >7 marginal setae 10
- 9 Tergite I with large medioposterior convexity and > 22 setae (Fig. 37) *marini* n. sp.
Tergite I not enlarged and margin with <15 setae (Fig. 7) *citrinae* n. sp.
- 10 Tergite I normal; tergite II with large medioposterior convexity (Fig. 16) *sinaloae* n. sp.
Tergites I-II of similar size or tergite I enlarged 11
- 11 Tergite I not markedly enlarged, similar to tergite II (Figs. 10, 34) 12
Tergite I enlarged, with definite medioposterior convexity (Figs. 12, 22) 13
- 12 Tergite I with >14 setae; tergite II with > 18 (Fig. 34) *conirostris* n. sp.
Tergite I with <14 setae; tergite II with <17 (Fig. 10) *zonotrichiae* n. sp.
- 13 Tergite VIII with >13 setae; tergite VII with >15 (Fig. 22) *taciturni* n. sp.
Tergite VIII with <10 setae; tergite VII with <13 (Fig. 12) *iliacae* n. sp.

Males (except for *M. major*)

- 1 Hypopharyngeal sclerites weak (Fig. 40); genital sac sclerites paired, oblong (Fig. 44) 2
Hypopharyngeal sclerites strong (Fig. 4); genital sac sclerite triangular (e.g., Fig. 3) 3
- 2 Temple width >0.36; total length >1.15; metanotum with >10 marginal setae; tergite I with >14
serini (Séguy)
Temple width <0.36; total length <1.15; metanotum with 10 marginal setae; tergite I with <14 (Fig. 42) *anoxanthi* n. sp.

3	Sternite II strongly arched, slender (e.g., Fig. 25)	4
	Sternite II not strongly arched, broad (e.g., Fig. 2).....	9
4	Sternite III with >35 setae; sternite VIII with >27 (Fig. 26).....	<i>brunneinuchi n. sp.</i>
	Sternite III with <33 setae; sternite VIII with <27.....	5
5	Tergite I with >19 setae; tergite VII with >23	6
	Tergite I with <19 setae; tergite VII with <24	7
6	Sternite VIII with >20 setae; tergite V with <28; tergite III with <25.....	<i>marini n. sp.</i>
	Sternite VIII with <20 setae; tergite V with >30; tergite III with >27.....	<i>aurantirostris n. sp.</i>
7	Tergite VIII with <15 setae; sternite VIII with >20; sternite IV with >39	<i>gularis n. sp.</i>
	Tergite VIII with >15 setae; sternite VIII with <20; sternite IV with < 38	8
8	Metanotal margin with <11 setae; tergite II with <20; sternite VII with <23; postspiracular setae on VI much longer than on V	<i>conirostris n. sp.</i>
	Metanotal margin with >11 setae; tergite II with >20; sternite VII with >24; postspiracular setae on VI subequal to those on V.....	<i>taciturni n. sp.</i>
9	Sternite VII with >20 setae; tergite VIII with >13; tergite VII with >18	<i>coronatae n. sp.</i>
	Sternite VII with <19 setae; tergite VIII with <13; tergite VII with <18	10
10	Tergite VIII with >9 setae; tergite VII with >12	<i>zonotrichiae n. sp.</i>
	Tergite VIII with <10 setae; tergite VII with <12	11
11	Metanotal margin with >9 setae.....	12
	Metanotal margin with <10 setae.....	13
12	Sternite III with >20 setae; tergite I with >12; temple width >0.40	<i>sinaloae n. sp.</i>
	Sternite III with <21 setae; tergite I with <12; temple width <0.40	<i>campestris n. sp.</i>
13	Sternite VIII with 4 setae; metanotal margin with only 6 setae.....	<i>citrinae n. sp.</i>
	Sternite VIII with >5 setae; metanotal margin with > 6 setae	<i>iliacae n. sp.</i>

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